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SEMIANNUAL SUMMARY REPORT
PERIOD ENDING DECEMBER 31, 1969

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OPERATIONS DIVISION SINGLE PASS REACTORS
SEMIANNUAL SUMMARY REPORT
PERIOD ENDING DECEMBER 31, 1969

By

T. Prudich
Manager, Production Planning, Scheduling
and Nuclear Materials Operation

February 11, 1970

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OPERATIONS DIVISION SINGLE PASS REACTORS
SEMIANNUAL SUMMARY REPORT
PERIOD ENDING DECEMBER 31, 1969

INTRODUCTION

In this semiannual issue⁽¹⁾ the single pass reactor and water plant data are shown for the six-months' period July through December, 1969 together with data for the three preceding six-months' periods. For comparison purpose the two years of experience will continue to be shown by dropping and adding a six-months' period with each semiannual issue.

STATISTICAL SUMMARY

The most significant statistics for the two-year period, CY-1968 and CY-1969, shown by individual single pass reactors (KE and KW) on the attached pages are summarized on pages 4 and 5. A graph showing the "Reactor Availability" for CY-1969 appears on page 12.

The low efficiency and production of the Single Pass K Reactors during the six-months' period July through December, 1969 were mainly due to the following:

1. The process tube power limitation imposed in September, 1968 at both K Reactors due to inlet water piping brittle fracture potential remained in effect.
2. The unusual number of unscheduled shutdowns experienced (see page 7 for details).
3. KE Reactor experienced a 17-day outage in July, 1969 for modification of A&B riser cross-tie system (DCP-522). (KW Reactor completed the A&B riser cross-tie system modification in May, 1969.)

GENERAL

1. An uninterrupted operation was experienced at KW Reactor in December, 1969 representing the sixth time since reactor startup that KW achieved a 100 percent time operated efficiency.
2. The thorium and supporting 94 Metal fuel elements (E-Q loading) were completely displaced with natural uranium loading at KW Reactor in October, 1969 and at KE in October, November and December, 1969 completing the DNR U-233 program.

T. Prudich, Manager
Production Planning, Scheduling
and Nuclear Materials Operation

TP: CO'M:bw

(1) Previous semiannual reports issued: DUN-850 through DUN-850 5, DUN-5566 and DUN-5566 1.

Single Pass Reactor
Statistical Summary

<u>Production (Input)</u>	<u>CY 1968</u>	<u>CY 1969</u>
<u>Plutonium - KMWDs</u>		
KE	1,228.3	928.5
KW	<u>1,063.7</u>	<u>1,064.0</u>
Total	2,292.0	1,992.5
<u>Plutonium - Kgs</u>		
KE	946.2	695.2
KW	<u>816.2</u>	<u>810.7</u>
Total	1,762.4	1,505.9
<u>Uranium (U-233) - Grams</u>		
KE	99,461	144,233
KW	<u>77,229</u>	<u>129,131</u>
Total	176,690	273,364
<u>Power Level</u>		
<u>Maximum - Average - MW</u>		
KE	4,249	3,938
KW	4,248	3,945
<u>Average Operating - MW</u>		
KE	4,143	3,729
KW	4,079	3,752
<u>Time Operating Efficiency - (TOE - %)</u>		
KE	81.0	68.1
KW	<u>71.3</u>	<u>77.7</u>
Combined	76.1	72.9
<u>Process Tubes Replaced</u>		
KE	6	10
KW	<u>7</u>	<u>6</u>
Total	13	16
<u>Process Tube Leaks (Incl. V.S.)</u>		
KE	0	5
KW	<u>3</u>	<u>2</u>
Total	3	7
<u>Helium Usage - CFD</u>		
KE	3,343	3,496
KW	5,163	5,506

<u>Reactor Outages - Number</u>	<u>KE</u>	<u>KW</u>	<u>Total</u>	<u>KE</u>	<u>KW</u>	<u>Total</u>
Scheduled	6	6	12	7	8	15
Unscheduled Shutdowns	6	9	15	13	6	19
Scrams	18	12	30	13	20	33
	30			34		
<u>Fuel Element Failures</u>						
Natural U	2	2	4	1	0	1
Enriched U	2	3	5	5	1	6
Other	0	5	5	1	7	8
<u>Outage Work - % Time Allocation</u>						
Charge-Discharge	7.8	9.3	8.5	9.0	9.3	9.1
Fuel Element Failure Removal	0.9	0.2	0.6	0.7	0	0.4
Tube Leak (Inc. V.S.)	0	1.7	0.8	1.5	0.6	1.1
Tube Replacement	0.1	0.1	0.1	0.5	0.5	0.5
Other Maintenance	6.1	2.9	4.5	10.8	5.3	8.0
Standard Check (Incl. Equip. Maint. Std.)	1.2	0.7	1.0	1.7	1.5	1.6
Production Test	2.3	2.9	2.6	3.1	2.4	2.7
Project Work	0	0	0	3.8	1.4	2.6
Flow Stoppage	0	10.4	5.2	-	-	-
Other	0.6	0.5	0.6	0.8	1.3	1.1
Total	19.0	28.7	23.9	31.9	22.3	27.1

REACTOR STATISTICS

	KE				KW		
	Jan-Jun 1968	Jul-Dec 1968	Jan-Jun 1969	Jul-Dec 1969	Jan-Jun 1968	Jul-Dec 1968	Jan-Jun 1969
<u>PRODUCTION (Input Basis)</u>							
KMWD - In Nat. U	328.4	63.8	3.5	40.1	297.2	60.5	2.8
KMWD - In Enr. U	309.1	527.0	508.7	376.2	248.9	457.1	520.9
KMWD - Total	637.5	590.8	512.2	416.3	546.1	517.6	523.7
KMWD - % of Forecast	99.6	101.1	100.7	75.1	86.2	109.6	92.6
Pu (kg) - In Nat. U	273.2	51.3	3.3	39.8	243.1	47.9	2.8
Pu (kg) - In Enr. U	235.8	385.9	372.6	279.5	185.8	339.4	374.7
Pu (kg) - Total	509.0	437.2	375.9	319.3	428.9	387.3	377.5
Conv. Ratio - In Nat. U	0.832	0.804	0.943	0.992	0.818	0.792	1.000
Conv. Ratio - In Enr. U	0.763	0.732	0.732	0.743	0.746	0.742	0.719
Uranium 233 - Grams	16,168	83,293	83,020	61,213	6,444	70,785	79,730
<u>OPERATING EFFECTIVENESS</u> ^(a)							
Power Level, Max - MW	4,388	4,110	3,972	3,904	4,387	4,110	4,013
Power Level, Avg - MW	4,320	3,967	3,836	3,623	4,233	3,926	3,794
Level Efficiency - %	98.4	96.5	96.6	92.8	96.5	95.5	94.5
Time Oper. Effic. - %	81.1	80.9	73.8	62.5	70.9	71.7	76.3
Production Effic.	79.8	78.1	71.3	58.0	68.4	68.5	72.1
Effective Cent. Tubes	2,221	2,218	2,229	2,253	2,140	2,202	2,256
Non-Eq. Loss/Startup	0.18	0.20	0.39	0.35	0.19	0.22	0.32

(a) Max. PL is Avg of Monthly Maximums; LE = Avg PL + Max PL; PE = LE X TOE.
 ECT = Equil. PL + Avg Power of 10 Most Productive Tubes.
 NE Loss/Startup is Expressed as Days of Equilibrium Operation.

REACTOR STATISTICS

c	KW				Total			
	Jan-Jun	Jul-Dec	Jan-Jun	Jul-Dec	Jan-Jun	Jul-Dec	Jan-Jun	Jul-Dec
	1968	1968	1969	1969	1968	1968	1969	1969
	297.2	60.5	2.8	179.3	625.6	124.3	6.3	219.4
	248.9	457.1	520.9	361.0	558.0	984.1	1029.6	737.2
	546.1	517.6	523.7	540.3	1183.6	1108.4	1035.9	956.6
	86.2	109.6	92.6	94.4	92.9	104.9	96.4	84.9
	243.1	47.9	2.8	166.9	516.3	99.2	6.1	206.7
	185.8	339.4	374.7	266.3	421.6	725.3	747.3	545.8
	428.9	387.3	377.5	433.2	937.9	824.5	753.4	752.5
	0.818	0.792	1.000	0.931	0.825	0.798	0.968	0.942
	0.746	0.742	0.719	0.738	0.756	0.737	0.726	0.740
	6,444	70,785	79,730	49,401	22,612	154,078	162,750	110,614
	4,387	4,110	4,013	3,877	8,775	8,220	7,985	7,781
	4,233	3,926	3,794	3,711	8,553	7,893	7,630	7,334
	96.5	95.5	94.5	95.7	97.5	96.0	95.6	94.3
	70.9	71.7	76.3	79.1	76.0	76.3	75.0	70.8
	68.4	68.5	72.1	75.7	74.1	73.2	71.7	66.8
	2,140	2,202	2,256	2,186	--	--	--	--
	0.19	0.22	0.32	0.31	0.18	0.21	0.35	0.33

E = LE X TOE.

on.

REACTOR STATISTICS

	KE				KW		
	Jan-Jun	Jul-Dec	Jan-Jun	Jul-Dec	Jan-Jun	Jul-Dec	Jan-Jun
	1968	1968	1969	1969	1968	1968	1969
<u>REACTOR OUTAGES</u> (Number, by Cause)							
Charge-Discharge	3	3	2	4	3	3	3
Tube Replacement	-	-	-	-	-	-	-
Fuel Rupture	2	2	-	5	5	1	-
Tube Leaks (Inc. Van S.)	-	-	-	3	1	-	1
Project Work	-	-	1	-	-	-	1
Production Tests	1	-	1	-	-	-	-
Front Face Leaks	-	1	-	-	-	-	-
Rear Face Leaks	-	-	-	1	-	-	-
Rods - Horiz. & Vert.	-	-	1	1	-	-	-
Reactor Hardware	1	-	-	-	1	-	-
Panellit System	6	7	3	3	5	4	5
Other Instrumentation	1	2	2	4	-	1	4
Electric Power	-	-	-	-	-	-	1
Water Flow (105 Bldg)	-	-	-	-	1	-	-
165 Bldg.	1	-	-	1	-	-	1
Reactivity Control	-	-	-	1	-	2	-
Temperature Control	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-
Total Outages	15	15	10	23	16	11	16
Outage Recap:							
(a) Scheduled Outages	3	3	3	4	3	3	4
Unsched. Shutdowns	3	3	1	12	6	3	2
Scrams	9	9	6	7	7	5	10

(a) Excluding those which followed scrams or unscheduled outages.

REACTOR STATISTICS

<u>-Dec</u> <u>1969</u>	<u>KW</u>				<u>Total</u>			
	<u>Jan-Jun</u> <u>1968</u>	<u>Jul-Dec</u> <u>1968</u>	<u>Jan-Jun</u> <u>1969</u>	<u>Jul-Dec</u> <u>1969</u>	<u>Jan-Jun</u> <u>1968</u>	<u>Jul-Dec</u> <u>1968</u>	<u>Jan-Jun</u> <u>1969</u>	<u>Jul-Dec</u> <u>1969</u>
4	3	3	3	4	6	6	5	8
-	-	-	-	-	-	-	-	-
5	5	1	-	1	7	3	-	6
3	1	-	1	-	1	-	1	3
-	-	-	1	-	-	-	2	-
-	-	-	-	-	1	-	1	-
-	-	-	-	-	-	1	-	-
1	-	-	-	-	-	-	-	1
1	-	-	-	-	-	-	1	1
-	1	-	-	-	2	-	-	-
3	5	4	5	7	11	11	8	10
4	-	1	4	2	1	3	6	6
-	-	-	1	-	-	-	1	-
-	1	-	-	-	1	-	-	-
1	-	-	1	3	1	-	1	4
1	-	2	-	-	-	2	-	1
-	-	-	-	-	-	-	-	-
-	-	-	-	1	-	-	-	1
23	16	11	16	18	31	26	26	41
4	3	3	4	4	6	6	7	8
12	6	3	2	4	9	6	3	16
7	7	5	10	10	16	14	16	17

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REACTOR STATISTICS

	KE				KW		
	Jan-Jun 1968	Jul-Dec 1968	Jan-Jun 1969	Jul-Dec 1969	Jan-Jun 1968	Jul-Dec 1968	Jan-Jun 1969
<u>OUTAGE WORK</u> (% Time Allocation, Including Cooling Time and Startup Preparation) ^(a)							
Charge-Discharge	7.9	7.7	7.3	10.6	11.0	7.5	8.5
Rupture Removal	1.3	0.5	0	1.5	0.4	0.1	0
Tube Leaks (Incl. Van S.)	0	0	0	2.9	2.0	1.4	1.0
Tube Replacement	0.1	0.1	0	1.1	0	0.1	0
Other Maintenance	5.0	7.2	12.1	9.6	3.6	2.3	5.6
Standard Check	1.1	1.3	1.7	1.8	0.8	0.6	1.9
Production Test	2.7	1.9	3.8	2.4	4.5	1.3	3.0
Project Work	0	0	0	7.4	0	0	2.7
Flow Stoppage	0	0	-	-	6.1	14.7	0
Other	0.8	0.4	1.3	0.2	0.7	0.3	1.0
Total	18.9	19.1	26.2	37.5	29.1	28.3	23.7

SCRAMS (Number, by Cause)

Reactor Operations:^(b)

Equip. Failure - 105	-	2	1	1	2 ^(c)	-	-
" " - 165	-	-	-	-	-	-	-
Improp. Proced - 105	-	-	-	1	-	-	-
Improp. Proced - 165	-	-	-	-	-	-	1
Unexplained Trips	6	6	2 ^(d)	2 ^(d)	5	4	6 ^(d)
Other Inst. Trips	1 ^(d)	-	2 ^(d)	3 ^(d)	-	1	3 ^(d)
Manual Trips	1	-	-	-	-	-	-
Subtotal	8	8	5	7	7	5	10
Test Facilities	1	1	1	-	-	-	0
Elect. Power Supply	-	-	0	-	-	-	0
Total Scrums	9	9	6	7	7	5	10

(a) Allocation per Standard, "Reactor Outage Time Reporting Procedure."

(b) Excluding scrums due to fuel failures and process tube leaks.

(c) Includes scram caused by a flow stoppage in a process tube.

(d) HSSS Trips

REACTOR STATISTICS

<u>Jul-Dec</u> <u>1969</u>	KW				Total			
	<u>Jan-Jun</u> <u>1968</u>	<u>Jul-Dec</u> <u>1968</u>	<u>Jan-Jun</u> <u>1969</u>	<u>Jul-Dec</u> <u>1969</u>	<u>Jan-Jun</u> <u>1968</u>	<u>Jul-Dec</u> <u>1968</u>	<u>Jan-Jun</u> <u>1969</u>	<u>Jul-Dec</u> <u>1969</u>
Startup Preparation) ^(a)								
10.6	11.0	7.5	8.5	10.1	9.4	7.6	7.9	10.3
1.5	0.4	0.1	0	0	0.9	0.3	0	0.8
2.9	2.0	1.4	1.0	0.3	1.0	0.7	0.5	1.6
1.1	0	0.1	0	1.0	0	0.1	0	1.1
9.6	3.6	2.3	5.6	5.0	4.3	4.7	8.8	7.3
1.8	0.8	0.6	1.9	1.1	1.0	1.0	1.8	1.4
2.4	4.5	1.3	3.0	1.7	3.6	1.6	3.4	2.1
7.4	0	0	2.7	0.1	0	0	1.4	3.7
-	6.1	14.7	0	-	3.0	7.3	-	-
0.2	0.7	0.3	1.0	1.6	0.8	0.4	1.2	0.9
37.5	29.1	28.3	23.7	20.9	24.0	23.7	25.0	29.2

1	2 ^(c)	-	-	-	2	2	1	1
-	-	-	-	1	-	-	-	1
1	-	-	-	-	-	-	-	1
-	-	-	1	-	-	-	1	-
2 ^(d)	5	4	6 ^(d)	7 ^(d)	11	10	8	9
3	-	1	3	2	1	1	5	5
-	-	-	-	-	1	-	-	-
7	7	5	10	10	15	13	15	17
-	-	-	0	-	1	1	1	-
-	-	-	0	-	-	-	-	-
7	7	5	10	10	16	14	16	17

ing Procedure."
leaks.
tube.

REACTOR STATISTICS

	KE				KW		
	Jan-Jun 1968	Jul-Dec 1968	Jan-Jun 1969	Jul-Dec 1969	Jan-Jun 1968	Jul-Dec 1968	Jan-Jun 1969
<u>OUTAGE TIMES</u> (Hours, Average)							
Charged to Scrams	13.5	4.3	7.3	12.0	41.2	1.7	6.7
Cooling Time	4.6	3.1	2.2	2.0	4.9	5.0	4.2
Startup Preparation	5.6	5.1	6.2	5.0	9.3	9.0	8.8
<u>OTHER STATISTICS</u>							
Charge-Discharge Rate ^(a)	19.7	14.4 ^(b)	13.4 ^(b)	11.8 ^(b)	11.4	10.1 ^(b)	12.2 ^(b)
Tubes Replaced - Total	6	0	1	9	5	2	1
Water Leaks:							
Process Tube	0	0	0	3	1	0	1
Van Stone Flange	0	0	0	2	1	1	0
Failures - Nat. U	2	0	1	0	2	0	0
Failures - Enr. U	0	2	0	5	3	0	0
Failures - Other	0	0	0	1	0	5	0
Disch. Expos.: (MWD/T)							
Nat. U - Weapons	641	674	674	0	615	709	709
Nat. U - Nondefense	1,062	1,171	1,348	804	1,099	1,190	1,185
Enr. U - Weapons	804	809	632	717	801	830	834
Enr. U - Nondefense	1,699	1,138	1,134	1,085	1,771	1,301	1,232
Special Depleted	2,773	1,466	2,004	3,637	2,813	1,454	2,008

(a) Tubes/hour, average for standard charging of regular fuel as defined in the "Reactor Outage Time Reporting Procedure."

(b) Includes charging of E-Q material.

REACTOR STATISTICS

n	KW					Total			
	Jul-Dec 1969	Jan-Jun 1968	Jul-Dec 1968	Jan-Jun 1969	Jul-Dec 1969	Jan-Jun 1968	Jul-Dec 1968	Jan-Jun 1969	Jul-Dec 1969
3	12.0	41.2	1.7	6.7	3.7	27.3	3.0	7.0	7.8
2	2.0	4.9	5.0	4.2	5.9	4.7	4.0	3.2	3.9
2	5.0	9.3	9.0	8.8	9.9	7.4	7.0	7.5	7.4
4(b)	11.8(b)	11.4	10.1(b)	12.2(b)	11.3(b)	14.9	12.4	12.7	11.6
	9	5	2	1	5	11	2	2	14
	3	1	0	1	0	1	0	1	3
	2	1	1	0	1	1	1	0	3
	0	2	0	0	0	4	0	1	0
	5	3	0	0	1	3	2	0	6
	1	0	5	0	7	0	5	0	8
	0	615	709	709	254	--	--	--	--
	804	1,099	1,190	1,185	1,104	--	--	--	--
	717	801	830	834	722	--	--	--	--
	1,085	1,771	1,301	1,232	1,141	--	--	--	--
	3,637	2,813	1,454	2,008	3,566	--	--	--	--

ar fuel as defined in the

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REACTOR STATISTICS

	KE				KW		
	Jan-Jun 1968	Jul-Dec 1968	Jan-Jun 1969	Jul-Dec 1969	Jan-Jun 1968	Jul-Dec 1968	Jan-Jun 1969
<u>OTHER STATISTICS - cont'd.</u>							
Helium Loss/CF/Day	3,719	2,967	2,840	4,152	5,450	4,877	3,453
Fuel Charged: (At End of Period)							
Tons Nat. U	162.1	2.8	3.0	333.8	110.7	1.2	5.5
Tons Enr. U	243.5	360.6	356.9	98.7	274.0	359.6	357.4
Tube Loadings: (At End of Period)							
Nat. U. Elems/Tube	38	38	38	38	38	38	38
Enr. U. Els/Tube (Sh)	46	46	46	46	46	46	46
Enr. U Els/Tube (Lg)	51	51	51	51	51	51	51
Mixers/Tube	1	1	1	1	1	1	1
Dry Channels	3	3	3	3	9	9	10
Water Tubes	5	5	7	11	4	4	6
Graph Stringers	6	6	6	6	8	8	7
Non-Fuel Productive Tubes:							
In Fringe Blanket	77	189	189	0	191	191	187
Elsewhere (Core)	216	240	210	30	214	237	231
("Buckle")		82	82	0		77	78
Top & Bottom				83			

REACTOR STATISTICS

n	KW					Total			
	Jul-Dec 1969	Jan-Jun 1968	Jul-Dec 1968	Jan-Jun 1969	Jul-Dec 1969	Jan-Jun 1968	Jul-Dec 1968	Jan-Jun 1969	Jul-Dec 1969
	4,152	5,450	4,877	3,453	3,559	9,169	7,844	6,293	7,711
0	333.8	110.7	1.2	5.5	356.0	272.8	4.0	8.5	689.8
9	98.7	274.0	359.6	357.4	84.4	517.5	720.2	714.3	183.1
	38	38	38	38	38	--	--	--	--
	46	46	46	46	46	--	--	--	--
	51	51	51	51	51	--	--	--	--
	1	1	1	1	1	--	--	--	--
	3	9	9	10	10	12	12	13	13
	11	4	4	6	9	9	9	13	20
	6	8	8	7	7	14	14	13	13
	0	191	191	187	0	268	380	376	0
	30	214	237	231	0	430	477	441	30
	0		77	78	0	--	159	160	0
	83				82				165

WATER PLANT STATISTICS

	KE				KW		
	Jan-Jun 1968	Jul-Dec 1968	Jan-Jun 1969	Jul-Dec 1969	Jan-Jun 1968	Jul-Dec 1968	Jan-Jun 1969
<u>WATER PLANT OPERATIONS</u>							
River Water Pumped-MMG	47,282	47,305	41,880	38,385	45,330	42,239	43,629
Water Treated-MMG	47,231	47,262	41,863	38,373	45,303	42,239	43,629
Chem. Consumption-ppm:							
Alum	0.875	1.081	1.756	0.707	2.087	1.015	1.224
Bauxite	4.429	4.401	4.145	4.353	3.701	3.922	4.311
Chlorine	0.854	.929	0.869	0.121	0.871	1.254	0.901
Sulfuric Acid	29.014	25.160	20.372	22.424	27.834	25.373	22.127
Filter Conditioner	0.019	0.014	0.025	0.239	0.014	0.008	0.022
Process Water-MMG	43,507	44,144	39,050	35,074	40,928	39,073	40,140
Proc. Water-GPM, Normal	197,500	197,500	189,000	190,800	197,700	197,200	190,600
Process Water Analysis:							
Turbidity-ppm	.008	.009	.013	.009	.012	.007	.008
pH	6.51	6.52	6.68	6.64	6.51	6.62	6.68
Cl Residual-ppm	.20	.20	.16	.09	.20	0.20	.16
Dichromate-ppm	.69	.50	.50	.50	.90	.90	.90
<u>STEAM PLANT OPERATIONS</u>							
Generation-MMM Lbs.	138.3	146.0	349.6	143.5	130.3	127.2	365.3
Gener.-Lbs/Hr., Max.	54,300	57,700	46,800	60,300	60,700	59,500	59,900
" -Lbs/Hr., Avg	32,000	33,400	30,000	32,700	29,800	29,100	32,800
Lbs. Steam/Gal. Oil	100.4	100.1	97.6	97.4	99.8	99.9	103.3

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WATER PLANT STATISTICS

un	Jul-Dec	KW				Total			
		Jan-Jun	Jul-Dec	Jan-Jun	Jul-Dec	Jan-Jun	Jul-Dec	Jan-Jun	Jul-Dec
9	1969	1968	1968	1969	1969	1968	1968	1969	1969
80	38,385	45,330	42,239	43,629	46,339	92,585	89,544	85,509	84,724
63	38,373	45,303	42,239	43,629	46,339	92,534	89,501	85,492	84,712
56	0.707	2.087	1.015	1.224	0.973	1.491	1.058	1.500	0.850
45	4.353	3.701	3.922	4.311	3.471	4.032	4.129	4.195	3.879
69	0.121	0.871	1.254	0.901	0.124	0.862	1.092	0.886	0.123
72	22.424	27.834	25.373	22.127	21.633	28.394	25.237	21.220	21.999
25	0.239	0.014	0.008	0.022	0.178	0.016	0.010	0.024	0.207
50	35,074	40,928	39,073	40,140	43,283	84,435	83,217	79,190	78,357
00	190,800	197,700	197,200	190,600	195,800	395,200	394,700	379,600	386,600
13	.009	.012	.007	.008	.005	--	--	--	--
8	6.64	6.51	6.62	6.68	6.69	6.51	6.57	6.68	6.67
6	.09	.20	0.20	.16	.09	--	--	--	--
0	.50	.90	.90	.90	1.12	.80	.70	.70	.81
6	143.5	130.3	127.2	365.3	149.1	268.6	273.2	714.9	292.6
00	60,300	60,700	59,500	59,900	70,300	115,000	117,200	106,700	130,600
00	32,700	29,800	29,100	32,800	33,600	61,800	62,500	62,800	66,300
6	97.4	99.8	99.9	103.3	102.3	100.1	100.0	100.4	99.9

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REACTOR AVAILABILITY
PERCENT OF TIME REACTORS OPERATED PLUS
SCHEDULED SHUTDOWN TIME
CY - 1969

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KE-REACTOR

KW-REACTOR

K-REACTORS AVERAGE

END

DATE
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